Familiar drugs may block Ebola virus infection

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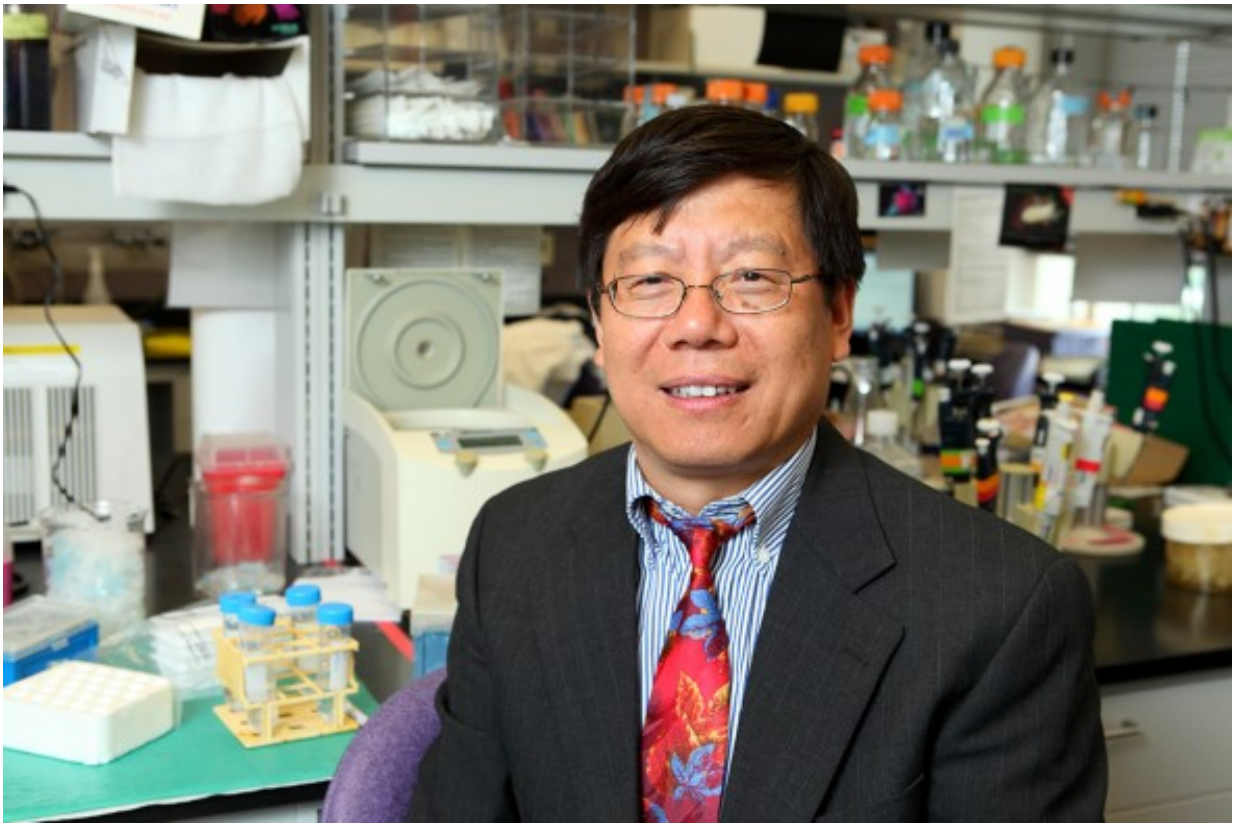

Lijun Rong, UIC professor of microbiology and immunology. Credit: Jenny Fontaine

A well-known class of molecules, many of which are already in use therapeutically, may be able to block the Ebola virus's entry into cells

and halt the disease in its tracks, according to researchers at the University of Illinois at Chicago.

The study is available online in advance of print in the *Journal of Virology*.

Ebola and the closely related Marburg virus are among the most lethal in the world, both highly contagious and deadly. There is an urgent need to develop either a vaccine or effective antiviral therapy to prevent future outbreaks.

"We know very little about the basic biology of these diseases," said Lijun Rong, UIC professor in microbiology and immunology and principal investigator on the new study.

Rong and his colleagues found that Ebola and Marburg viruses both use gateways called G protein-coupled receptors, or GPCRs, to enter a cell after attaching to its surface. Blocking entry with a drug that ties up the receptor may prove to be an effective therapy.

"These G protein-coupled receptors are a big family of closely related molecules in humans—altogether, probably more than a thousand," said Rong. Because GPCRs are involved in many human diseases, he said, a host of drugs have already been developed that target them.

"In the history of therapeutics, about half of our drugs were developed to target GPCRs. For example, a number of antihistamines used as allergy medications are GPCR receptor antagonists," he said.

Rong and his coworkers screened approximately a thousand compounds using a NIH-funded high-throughput screening facility. They found 20 GPCR antagonists, or molecules that block GPCR receptors, were able to block Ebola and Marburg viruses from entering cells.

Learning how the two viruses infect cells and how they can be blocked offers the hope of finding therapeutics to combat both deadly diseases, Rong said.

"There are a lot of drugs and compounds that work through this mechanism—acting as antagonists to GPCR receptors," he said. "This gives us a huge repertoire that can be tested against Ebola/Marburg."

Provided by University of Illinois at Chicago